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# IS PAY RELATED TO PERFORMANCE IN THE NETHERLANDS? AN ANALYSIS OF DUTCH EXECUTIVE COMPENSATION, 2002–2006

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*Summary*

This paper analyzes the characteristics of Dutch pay arrangements. We show that (1) studying executive compensation outside the Anglo-American countries adds insights to the pay for performance literature, (2) pay for performance relations are different for various types of executives and for various compensation components, (3) attention to the methodological treatment of conditional stock (option) grants is important, and (4) researchers should go beyond stock market performance indicators to detect the performance relatedness of pay. All in all, a myriad of pay-performance relationships has been found for the Dutch case, when the above is accounted for.

**Key words:** executive compensation, pay for performance, The Netherlands

**JEL Code(s):** G3, J3

## 1 INTRODUCTION

For the Anglo-American world, the debate about the level, structure and role of executive pay in different countries triggered considerable academic interest (Bebchuk and Fried 2003). According to Murphy (1999: 1), "CEO pay research has grown even faster than CEO paychecks." In continental Europe, however, the public outrage over executive compensation is fuelled regularly by new events, too. For instance, in 2000, former top managers of Mannesmann were accused of having distributed take-over premiums of about € 60 million among themselves. Similarly, in 2006, public discontent was expressed when the German multinational firm Siemens announced a 30 per cent rise in managerial pay amid lower profits and job cuts. Likewise in The Netherlands, strong criticisms were raised against the total compensation of top executives of listed corporations such as Royal Dutch Shell, Heineken,

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Reed Elsevier, Unilever and Van der Moolen, which paid their top managers considerable bonuses irrespective of their meagre performance in 2004. In 2006, the national Monitoring Committee on Corporate Governance in The Netherlands expressed its concern about the lack of transparency on executive compensation policies and sums of Dutch listed firms. And finally, Bebchuk and Spamann (2003) argue that share-based incentive plans stimulated excessive risk taking in the banking sector, which may have contributed to the incidence of the financial crisis in 2008.

Since Jensen and Meckling (1976), the idea that executive compensation should be aligned with shareholder interest, and hence corporate performance, has gained a strong foothold in economics, finance, and management research. The executive compensation literature has since taken two routes to test the notion contained in Jensen and Meckling's agency theory (Devers et al. 2007). First, several studies have been conducted to assess behavioral and performance effects of performance-related pay. These studies find, for example, that CEOs who are largely paid in stock options tend to take more risky decisions (Certo et al. 2003; Sanders and Hambrick 2007; Bebchuk and Spamann 2003). Second, research into the performance relatedness of executive pay has been conducted: is actual executive pay indeed positively related to company performance (Bertrand and Mullainathan 2001; Hall and Liebman 1998; Jensen and Murphy 1990)? Our analysis of Dutch executive compensation contributes to the latter stream of research.

This study offers a fourfold contribution to the existing literature. First, as of today, executive compensation practices have been widely investigated, in particular in the US and somewhat less so in the UK. However, there still is little systematic evidence on the pay packages received by top managers in other countries (Barkema and Gomez-Mejia 1998; Devers et al. 2007). Results of these US-UK studies are translated into policy prescriptions throughout the world, largely disregarding local conditions. Analyzing executive compensation in alternative institutional settings may further improve our understanding of how these factors may affect executive compensation. The Dutch case is much more representative for continental Europe, where in comparison to the US-UK practice compensation is not so much dominated by stock-based pay components. So, with Dutch data, we can investigate whether US-UK findings can indeed be translated to another context.

Second, our analysis is at a level of detail that goes unprecedented for the Dutch case, and is rarely seen in pay for performance research, to date, generally. We have collected compensation information for all executives in most listed corporations in The Netherlands over a five-year period (2002–2006). With the exception of pension plans, virtually all compensation arrangements have been taken into account. Consequently, we distinguish among, broadly, salary, bonus, stock options and share plans. Moreover, our analyses of pay-performance sensitivity include both the components of pay, and total

pay. After all, different compensation elements may well be used to stimulate a variety of corporate outcomes, implying that the pay-performance relationship might therefore be different for the various components of pay.

Third, for stock options and share plans, the conditionality of grants is taken on board. Unlike in the US, in The Netherlands, grants are often made under the condition that pre-specified performance targets are met over the course of – generally – 3 years. Other stock-based compensation types may not be conditional, but the executive is not allowed to exercise the option or sell the stock before a pre-specified date. Based upon these restrictions, the expected value of executive stocks or stock options will be lower than the unconditional market value of these assets. We take these restrictions on selling or exercising stock-based compensation and the conditionality of grants into account, and thus further specify the definition of long-term compensation as it has been used by, for example, Hall and Liebman (1998).

Fourth, and finally, the ultimate performance variable is usually taken to be the change in shareholder wealth, often referred to as shareholder value. For example, the oft-cited Jensen and Murphy (1990) pay-performance sensitivity indicator is based on this criterion. For our study, we analyzed the annual reports for half of the companies in the sample, and elicited the most important performance criteria. In contrast, researcher-selected performance criteria were used in the few studies of Dutch executive compensation (for example, Duffhues and Kabir 2008; Otten et al. 2008). Consequently, our study explicitly focuses on the multiplicity of performance criteria, exploring how this may affect the pay-performance relationship. Below, we first introduce extant theory, before introducing our methodology, data and evidence.

## 2 THEORY

### 2.1 *Introduction*

The compensation packages of top managers of listed companies can be extremely complicated. In their conceptual framework, Barkema and Gomez-Mejia (1998) distinguish three broad categories of pay level, long-term orientation, and pay-for-performance predictors, each including many determinants: compensation criteria, governance characteristics, and other contingencies. We distinguish fixed payments from variable (performance criteria-based) pay components. In analyzing the pay-performance link, it is important to distinguish the influence of performance on pay (i.e., ex post compensation) from the influence of pay on performance and behavior (i.e., ex ante compensation). The former determines the actual pay-performance link, based upon actual or realized performance.

This paper focuses on ex post compensation, seeking to determine the extent to which this is related to realized performance. As the current state

of the art is largely based on the available US evidence, the theoretical background we formulate below provides a benchmark only, as we cannot be sure that the American evidence can simply be transplanted to the Dutch context. In the empirical part of our study, we further explore the anticipated effect of corporate performance on executive pay for our Dutch companies in order to be able to discuss our results in view of the literature, reflecting on the implications of the idiosyncrasies of a non-American setting such as the Dutch. In the Subsections 2.2 up to 2.4, the relevant pay for performance literature is discussed for fixed pay, short-term variable pay and long-term variable pay, respectively. Subsection 2.5 discusses the need for replication, as well as the findings of prior Dutch pay for performance studies.

### 2.2 *Fixed Pay*

Salary is defined as a fixed amount of cash, with the level being set at the beginning of a year. To explain developments in the level of salary, variables related to market, industry, company, task, and personal characteristics have been used (e.g., Jacobsen and Skillman 2004; Rosen 1992). Most pay for performance studies posit no expectations with respect to the performance sensitivity of fixed pay. Indeed, only indirect effects of performance on fixed pay may emerge. For example, the introduction of variable pay increases the risk an executive faces. This translates in a risk premium that may become apparent as an increase in fixed pay in case executives are risk averse. Also, in the longer run, variable pay may increase the wealth of executives as a group, and thereby boosts the reservation price a company faces when hiring an executive. All in all, however, it seems unlikely that a direct pay-performance relationship will exist for fixed pay.

### 2.3 *Short-Run Variable Pay*

Executive compensation is usually determined as the result of a complex bargain between the corporation and the (candidate) executives (Gomez-Mejia and Wiseman 1997). In this bargain, the rationale for the pay-performance link emerges as a result of the asymmetry of information between corporate representatives and (candidate) executives. Following principal–agent theory, the objective of compensation contracts is to align the interest of executives and shareholders (Jensen and Meckling 1976). Thus, the contracting approach argues that compensation schemes are a solution to principal-agent problems. In this respect, the board of directors serving the interests of the shareholders offers compensation packages that provide efficient incentives to the executives to maximize shareholder value (Murphy 1999). "The optimal contract does not imply a 'perfect' contract, only that the firm designs the best contract it can in order to avoid opportunism and malfeasance by the

manager, given the contracting constraints it faces" (Conyon 2006: 25). In the contracting approach, the relationship between corporate performance and executive compensation thus reflects the reward for prior good performance and executive behavior (Devers et al. 2007).

In the design of performance-related pay, short-term variable compensation is generally distinguished from long-term variable compensation. Short-term variable compensation (or bonus) is determined at the end of the year, and based on prior quantitative and/or qualitative performance criteria, which are set at the beginning of the year (Abowd and Kaplan 1999). This short-term variable compensation is generally paid out in cash, and used to motivate executives through accounting measures of corporate performance, and qualitative indicators relating to, e.g., strategy implementation. The argument to use accounting measures is that they are more directly influenced by executives, whereas market measures are generally affected by many factors outside the direct control of executives as well (Gomez-Mejia and Wiseman 1997; Murphy 1999). The informativeness of performance criteria is crucial, which creates space for additional performance indicators besides market value ones (Holmström 1979).

In this respect, the conceptual distinction between line of sight and goal agreement is relevant (Baker 1992). Accounting measures can be more directly controlled by executives, and thus are generally characterized by a high line of sight. Market values generally reflect higher levels of goal agreement between executives and shareholders. The more direct executive control and the increased informativeness of performance measurement come, in principle, at the cost of the increased ability to manipulate accounting measures. The overwhelming focus of the pay for performance literature on market values thus implies an emphasis on goal agreement between the executives and the shareholders, but neglects the extent to which executives can actually influence these outcomes.

Finally, accounting measures of performance reflect current and past performance, and thus are backward looking. In contrast, the market valuation of corporate performance will also reflect anticipated future performance (Devers et al. 2007). Since the anticipation of future earnings and actual earnings do not have to coincide (Morgan and Poulson 2001), the effect of these variables on executive compensation can also be expected to be different. As a result, we would expect short-term variable compensation (bonus) to be particularly affected by accounting measures of corporate performance.

### 2.4 *Long-Term Variable Pay*

The overwhelming majority of studies in the pay-performance literature focus on long-term variable compensation. Long-term variable compensation is calculated as the annualized present value of any cash or cash-equivalent, based

on outcomes over a period longer than 1 year (Abowd and Kaplan 1999). Long-term variable compensation includes stock options, restricted stocks, stock appreciation rights, phantom stock plans, performance unit plans awards, and performance share plans. The available empirical evidence on pay for performance is widely documented, both from an economics and finance perspective, as well as from an organization and management theory angle (e.g., Devers et al. 2007; Gomez-Mejia and Wiseman 1997; Jensen and Murphy 2004; Murphy 1999). Notably, all these studies, to a large extent, reflect on analyses based on US samples. The seminal paper in the pay-performance literature is Jensen and Murphy (1990). In their research, they found that most of pay-performance sensitivity (PPS) comes from stock ownership.

Nevertheless, PPS is too small to support the principal-agent theory. Subsequently, Hall and Liebman (1998) criticized the Jensen and Murphy approach because of (a) the time-period under study and (b) the neglect of CEO stock holdings in their analysis. After correcting both weaknesses, their results clearly indicated stronger pay-performance sensitivity (Hall and Liebman 1998). Following these seminal papers, several studies addressed the pay-performance link in more detail. For example, in a series of papers, Aggarwal and Samwick (1999a,b, 2003) study the effects of performance characteristics, such as the volatility of market returns and relative performance indicators, on PPS. Others investigate the relevance of performance surprises (e.g., Baber et al. 1998) and the effect of governance structures (e.g., Conyon and Peck 1998). Devers et al. (2007) offer a detailed discussion of this stream of work. Here, it is relevant to note an additional improvement to the Hall and Liebman (1998) methodology: research should acknowledge that grants are sometimes conditional on the realization of performance targets during the vesting period. For such grants, the number of options or shares that is effectively granted depends on the extent to which targets are met. As some of these targets may be more competitive than others, it is salient to calculate the expected number of granted options or shares.

### 2.5 *Need for Replication*

To conclude, we observe that the labor market model of executive compensation primarily provides a description of the complex bilateral bargain regarding fixed salary. Considering the bargaining process as to the variable executive pay components, conclusive empirical evidence of strong pay for performance is lacking. Moreover, both the familiar pay-performance sensitivity indicator (i.e., the Jensen–Murphy statistic) and the Hall–Liebman alternative emphasize changes in shareholder wealth. Additional detail is needed in order to grasp the multiple pay-performance linkages between different pay components, on the one hand, and alternative market-based and accounting-

based performance indicators, on the other hand, that characterize compensation policies in continental Europe.

Research into the performance sensitivity of compensation in Dutch listed companies is scarce. Duffhues and Kabir (2003, 2008) and Cornelisse et al. (2005) study executive compensation at the end of the 1990s and the early 2000s. As there was no legal obligation then to publish compensation information (see "Dutch Corporate Governance System"), their studies are complicated by large numbers of missing values. Potentially, firms self-select into publishing compensation figures motivated by reasons related to the topic of this paper, and therefore their results may not generalize to the period after which this legal obligation was installed – i.e., 2002. The findings of Cornelisse et al. (2005) point at weak pay-performance relationships, at best. More recently, Otten et al. (2008) also analyzed the performance sensitivity of compensation for the 1996–2005 period. Using data distributed by a compensation consultant for the years prior to 2002, they are not able to find large performance sensitivities either. These studies, however, do not control for cross-sectional heterogeneity and individual effects. Long-term incentive pay has also not been comprehensively studied in prior work.

## 3 DATA AND METHOD

### 3.1 *Dutch Corporate Governance System*

The Dutch system of corporate governance contains three key sets of actors: managers and supervisory board members, shareholders, and other stakeholders (i.e., financial intermediaries, workers and other firms). More detailed descriptions of the system of corporate governance and finance in The Netherlands can be found in, for instance, De Jong (2001); Poutsma and Braam (2005), and Van Ees and Postma (2005). Here, we summarize the system's core.

The focal point of the Dutch corporate governance system is a two-tier board structure, consisting of an executive management board (*Raad van Bestuur*), in charge of the day-to-day operations of the firm, and a non-executive supervisory board (*Raad van Commissarissen*). Members of the supervisory board are appointed for four-year terms by the annual meeting of shareholders. From October 2004 onwards, the workers' council has the right to a binding nomination of at most one third of the supervisory board's membership. In The Netherlands, industry or class-based unions are not allowed to directly participate in supervisory boards. The mean number of members on the supervisory and management boards is slightly more than five and three, respectively (Spencer Stuart 2005). An individual cannot serve on both boards of the same company. The management board, and in particular the CEO, has a large influence on appointments to the supervisory board (Van

der Goot and Van het Kaar 1997). Inside (managerial) ownership of listed firms is unimportant in The Netherlands.

Shareholders/investors exercise voice through voting at the annual meeting (*Algemene Vergadering van Aandeelhouders*). In considering voting rights in The Netherlands, it is important to bear in mind that, with the exception of the largest corporations listed on Euronext Amsterdam, most (smaller) Dutch corporations limit the voting rights of their shareholders. At the beginning of the 1990s, Dutch institutional investors held substantial equity stakes. However, from 2002 onwards, their stakes are declining and increasingly taken over by large foreign investor companies, which tend to be substantially less patient investors.

The Tabaksblat committee, representing the Dutch government, the Dutch shareholder association, Euronext Amsterdam and the Dutch employers' organizations, was assigned the task to establish a Dutch corporate governance code. This Tabaksblat code came into effect in January 2004 (Akkermans et al. 2007). In addition, from the fiscal year 2002 onwards, Dutch listed companies are required by law to disclose remuneration details of individual executives. Taken together, these institutional changes have resulted in a considerable increase in transparency and disclosure of company information of Dutch listed corporations from 2002 onwards.

Dutch practice is different from that in both Germany and the US. Dutch corporate law forbids insiders to hold a position on the supervisory board, but quasi-insiders (experts and other non-employee members who act in the interest of the incumbent management) frequently sit on Dutch supervisory boards. In about 25 per cent of the non-financial and non-service companies, a network tie exists between the supervisory board or management board of this firm and the supervisory board or management board of a financial intermediary (Chirinko et al. 2004), although the role of the financial sector seems to be diminishing *vis-à-vis* the capital market (Heemskerk et al. 2003).

### 3.2 *Sample and Model*

A dataset of all executives in 107 stock-listed Dutch companies in 2002–2006 was hand-collected. Information on fixed pay, cash bonuses, stock options, share grants and portfolios, and other compensation types was derived from the annual reports of these companies. Firm performance data was taken from Thompson Financial's Datastream database. We recorded compensation information from 2002, as since then the reporting of individual executive compensation details for all statutory members of the management board is required. Data collection took place in the period following the publication of the last 2006 annual reports, in the summer of 2007.

The Dutch stock market is characterized by relatively few listings and a large variety in underlying corporate activities. We therefore aimed to include

all listed firms in our sample. An initial count of all listed companies by April 1st 2002–2006 resulted in 177 listings. Several companies were not included in the sample because their primary listing was elsewhere, and there was no material business activity in The Netherlands. Executives in these corporations would probably not conform to Dutch pay practices. Also, it was required that corporations were listed for at least 3 years in the sampling period. Because of information availability, a further requirement was that at least two of these listings should be in or after 2004. As a consequence of our estimation method (see Section 3.5), corporations with fewer listings would be removed from the sample, giving cause to the above requirements. Thus, companies that de-listed in 2004 but were listed throughout 2002–2004, as well as companies that were listed as of 2005 or later, are not included in the sample. For the former, information would be difficult to obtain; for the latter, the observation window is too short to draw meaningful conclusions. In the end, 117 corporations remained in the target sample. Annual reports for all these companies were analyzed. Whenever annual reports were not found, the company was contacted and the reports were requested. The final sample consists of 107 corporations. Compensation information was derived from the annual reports for all statutory executives sitting on the 107 companies' management boards. This resulted in 1,695 observations on 543 executives. Out of these, 170 (31 percent) were in the board throughout the observation window, whereas 325 (60 percent) are mentioned at least for 3 years in a row.

The deletion of 30 non-Dutch companies furthers a clear definition of the sampling frame, and is likely to make our results more generalizable for the Dutch context. For statistical and informational purposes, however, 40 additional companies were removed, which may imply a sampling bias. The main reasons for de-listings may, after all, be either bankruptcy or merger. Both events are likely to emerge in situations of performance extremity. Although this may theoretically hamper the interpretations of our results, we note that the relevant population of 147 Dutch companies accounted for 685 listings in 2002–2006, whereas our sample includes 523 listings for 107 companies (76 percent of the population). Nevertheless, our results should be interpreted with this sample bias in mind.

We estimate the following regression model for executive $i$ in corporation $j$ at time $t$:

$$COMP^{g}_{ijt} = \beta_0 + \beta_1 * SIZE_{jt} + \beta_2, \ldots, \beta_5 * PERF_{jt} + \varepsilon_{jt}, \quad (1)$$

where $COMP^{g}_{ijt}$ refers to the $g$ $(1, \ldots, 7)$ compensation variables (see Section 3.3), $SIZE_{jt}$ refers to firm size, and $PERF_{jt}$ to firm performance (see Section 3.4). The estimation method is explained in Section 3.5.

### 3.3 *Dependent Variables*

Compensation is defined as the change in the wealth of the executive caused by grants of the company to the executive or changes in the value of grants made to the executive in the past. We thus include fixed salary, cash bonuses, stock option grants, share grants and the change in the value of the option and share portfolio in our study. Such an all-inclusive study goes unprecedented in The Netherlands, and is rarely seen in the academic literature.

#### 3.3.1 *Fixed Salary*

Executives in virtually all corporations obtain a fixed salary in cash. If such salaries were made in foreign currencies – mainly US dollars or UK pound sterling – the value was converted into euros using the European Central Bank's conversion rates per July 1. To properly account for appointments or leaves during a year, the number of months the executive worked in the focal position has been recorded, and the salary is adjusted accordingly. The fixed salaries are thus recorded on an annual basis.

#### 3.3.2 *Cash Bonus*

Supervisory directors in European countries tend to use cash bonuses to reward executives for good performance more so than their American counterparts. Also, cash bonuses may be used to reward executives for individual performance, which is not (directly) observable from corporate outcome measures. Bonuses have been collected 'as they are', without a correction for appointments or leaves, but – where necessary – conversions to euros were made.

#### 3.3.3 *Stock Option Grants*

Stock options are the right to buy shares in the company at a pre-specified exercise price. In our sample, 68 companies have granted stock options to one or more executive(s) in one or more year(s). Such options typically cannot be exercised for 3 years (the so-called vesting period), and can normally be exercised in the 2 years thereafter. Options have been valued through the binomial model and the Black-Scholes formula. The resulting values correlated with a coefficient of 0.99. We therefore – arbitrarily – used the binomial model valuations in the analyses. For this valuation, six input variables are required.

1. The *exercise price* is taken at face value. In case options were granted on shares by the focal company listed on a foreign stock exchange, the value was computed with the information for this foreign listing, after which the resulting valuation was converted into euros.
2. The *number of options granted* was taken at face value for unconditional options. In The Netherlands, conditional option grants are also frequently

observed. These conditional grants imply that there is not only a restriction on exercising stock options, but also that certain performance targets determine the number of options that is granted at the end of the vesting period. Thus, say, instead of being granted 10,000 options, which may be exercised after 3 years (unconditional options), an executive knows that s/he will receive 7,000 options when performance is low, 10,000 when performance is at target, and 13,000 options in cases of outstanding performance. We corrected for this conditionality of grants by computing the expected number of options to be granted at the end of the vesting period using the equal probabilities method. This method involves the computation of the number of options to be granted at each performance level (mentioned in the annual report). Subsequently, the computation of the expected number is based on the assumption that all performance levels are equally likely.

3. The *expected life* of the option is determined. Most options are exercised somewhere after the end of the vesting period, but before the options lapse. Computing the value of the options at the time they expire would thus result in a biased estimate. We used two rules of thumb to determine the value of the options. The first rule implies that executives exercise the options halfway the period during which the executive is allowed to do so. The second rule involves exercising the option when the stock price reaches a certain threshold, which was set at twice the price of the option. The valuations that resulted with each of these rules correlated with a coefficient of 0.96. We therefore – arbitrarily – choose the first decision rule.
4. The *volatility* of the share price was determined using closing prices in the three preceding years.
5. The *stock price at valuation date* was taken as the average stock price in a one-month window around the end of the year of valuation. Thus, the year-end closing price was taken, which was averaged out over the period of December 15 – January 15 to filter out possible outliers.
6. Finally, the *dividend yield* was computed by dividing the dividend in the previous year by the half-year stock price in the previous year, where this price was, again, taken as the average of 30 closing prices around July 1.

#### 3.3.4 *Stock Option Portfolio*

Once options have been granted, the wealth of the executive varies with the changes in the values of the options. Such changes, although of material importance, have rarely been taken into account in empirical work (Hall and Liebman 1998). Therefore, the six input parameters to the binomial model mentioned above are updated every year the options have not been exercised and have not lapsed. This implies, for instance, that when conditional grants become unconditional, the effective number of stock options is recorded

instead of the expected amount. Also, when options are exercised, the associated profit and the reduced value of the stock option portfolio have been noted. Stock options may or may not lapse when an executive leaves the company. This has been taken into account. The 'stock option portfolio' variable, however, refers to the autonomous change in the value of the portfolio due to updated parameter values.

#### 3.3.5 *Share Grants*

A large minority of 42 companies have granted shares in one or more year(s) to one or more executive(s). Since shares are usually granted at no cost to the executive, the valuation is straightforward: the number of shares granted is multiplied by the share price at the end of the year, averaged out over thirty closing prices. In case share grants are conditional, the equal probability method, which was also applied to stock options, has been used.

#### 3.3.6 *Share Portfolio*

Comparable to option portfolios, share grants also constitute a portfolio if the grants cannot be sold for a number of years, as is usually the case. Shares that can be traded on the stock market, including voluntarily bought shares, are not taken into account. This is both because stock ownership is rare in The Netherlands (or, if present, very substantial) and because information on the exact number of unrestricted shares owned by the executive is difficult to obtain. If shares lapse because of termination of the executive's contract, this is taken into account.

#### 3.3.7 *Total Compensation*

Total compensation includes all the above-mentioned variables, as well as irregular cash payments (such as the value of perks), the profit derived from exercising options and the – infrequent – lapsing of option and share plans.

### 3.4 *Independent and Control Variables*

According to Devers et al. (2007), company performance has been operationalized in a variety of ways in the executive pay – performance literature, including both market-based measures, such as share price increase or total shareholder return, and accounting-based measures, such as return on equity or return on assets. Since accounting-based measures of corporate performance reflect past performance, whereas investors also factor in expected future performance in determining the stock price, the choice of performance measure is not conceptually unimportant (Devers et al. 2007). Empirically, however, there is not much guidance as to which measures are frequently used.

TABLE 1 – PERFORMANCE CRITERIA

| | 2005 | 2006 |
|---|---|---|
| Total number of criteria | 154 | 244 |
| Short-term criteria (bonuses) | 90 (58 per cent) | 151 (62 per cent) |
| Financial | 85 (94 per cent) | 122 (81 per cent) |
| Non-financial | 5 (6 per cent) | 29 (19 per cent) |
| Long-term criteria (options and shares) | 64 (42 per cent) | 93 (38 per cent) |
| Financial | 62 (97 per cent) | 82 (88 per cent) |
| Non-financial | 2 (3 per cent) | 11 (12 per cent) |

Note: The sample consists of 54 firms in 2005 and 63 firms in 2006. All AEX and most AMX funds are included. Percentages are included in brackets.

To measure company performance, we first made an inventory of the performance criteria used by the 54 largest companies in 2005 and the 63 largest companies in 2006, both for short-term variable compensation (i.e., cash bonus) and long-term (i.e., option and share) plans. The plethora of criteria that was found indicates that a single measure of corporate performance is likely not to capture all aspects of corporate performance on which compensation contracts steer. The criteria were subdivided, as Table 1 shows, according to – first – the type of compensation to which they applied and – second – whether the criterion was related to financial targets or not.

The findings in Table 1 show that the majority of the performance criteria are financial, although non-financial criteria have become more popular. In 2005, six per cent of the short-term criteria were non-financial and three per cent involved long-term criteria. These percentages increased to 19 and 12, respectively, in 2006. Also, the findings indicate that any firm uses, on average, three to four performance criteria. Although a large variety of targets was set, we could create groups of performance criteria at a higher level of abstraction. The conceptual difference between, for example, relative share price and relative total shareholder return will be small. Thus, four performance measures were defined and applied throughout this study. These performance measures cover 75 per cent (2006: 82 per cent) of the short-term financial performance measures in 2005. The financial performance measures that are not covered by our criteria refer mostly to cash flow variables or ambiguously defined criteria such as ‘growth’ or ‘the value of new businesses’. For the long-term criteria, the four performance measures cover 89 per cent (2006: 87 per cent) of the financial performance criteria.

Consequently, for this study, four performance measures were used: revenues, profit, relative total shareholder return, and earnings per share (EPS). Profit is measured as operating income divided by total assets. Relative total shareholder return includes share price appreciation and dividends relative to

a peer group. It is not practical to use the peer groups that companies use themselves because (1) peer groups are not always reported upon, (2) companies in the peer group are usually not included in the sample, and (3) different peer groups tend to apply for fixed salaries as opposed to option and share plans. Thus, four peer groups were determined through cluster analysis based on firm size, proxied for by total assets, revenue, market value, and the number of employees. Also, the number of years (in 2002–2006) the firm was listed in either the index of large caps (AEX 25) or midcaps (AMX 20) was included as a clustering variable. Total shareholder return (TSR) was computed for each company in the sample, and relative TSR was defined as the deviation of company TSR from the cluster mean. Because only four clusters exist in the sample, the relative TSR measure only relates to crude proxies for firm size, and is not informative with respect to outperformance relative to, for example, the focal industry. The data was obtained from Thomsen Financial's database Datastream.

In the analyses, firm size – measured by the number of employees – is included as a control variable, since firm size traditionally explains a large share of the variance in executive pay (Tosi et al. 2000). Also, director dummies are added to capture individual skill differences. Note that by including director dummies, firm and industry effects are indirectly included in the analyses as well, since the average director effect corresponds to the firm and industry effect.

### 3.5 *Method*

The data represent an unbalanced panel with information on 543 executives in 5 years. The total number of observations is equal to 1,695, of which 576 are CEOs. A correlation matrix of the variables of interest is depicted in Table 2.

The correlation coefficients among the compensation (dependent) variables are relatively low, with the exception of the correlation between share grants and the change in value of prior share grants (0.64). This is not surprising. Overall, there are no strong linear relationships among compensation elements. The correlation coefficients among performance (independent) variables are fairly low as well, which indicates that each captures a relatively unique part of company performance. The only noteworthy coefficient is the relationship between the number of employees and revenues (0.65). It may be that as a consequence of this covariation – probably caused by the fact that both measures are a proxy for firm size – the individual contribution of either variable is difficult to assess due to multicolinearity. The correlations among compensation elements and performance measures are various, suggesting that each performance measure may be a relevant predictor for some compensation elements but not for others. No definitive catch-all measure is

TABLE 2 – DESCRIPTIVE STATISTICS AND CORRELATIONS

| | | Mean | St.dev. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fixed salary (€) | 450,665 | 430,194 | 1.00 | | | | | | | | | |
| 2 | Cash bonus (€) | 208,637 | 360,252 | 0.28 | 1.00 | | | | | | | | |
| 3 | Option grants (€) | 94,901 | 252,099 | 0.18 | 0.32 | 1.00 | | | | | | | |
| 4 | Option value change (€) | 103,664 | 783,556 | 0.01 | 0.08 | 0.22 | 1.00 | | | | | | |
| 5 | Share grants (€) | 102,194 | 311,095 | 0.17 | 0.35 | 0.36 | 0.26 | 1.00 | | | | | |
| 6 | Share value change (€) | 19,644 | 98,078 | 0.10 | 0.27 | 0.28 | 0.35 | 0.64 | 1.00 | | | | |
| 7 | Revenues (millions) | 8,513 | 18,962 | 0.32 | 0.51 | 0.19 | −0.01 | 0.21 | 0.13 | 1.00 | | | |
| 8 | Profit (%) | 4.9 | 19.1 | 0.03 | 0.04 | 0.07 | 0.03 | 0.07 | 0.02 | −0.05 | 1.00 | | |
| 9 | RTSR | 0.0 | 0.4 | −0.02 | 0.05 | 0.06 | 0.14 | 0.04 | 0.03 | −0.04 | 0.16 | 1.00 | |
| 10 | EPS (€) | 1.3 | 1.5 | −0.03 | 0.02 | −0.08 | −0.01 | −0.01 | 0.03 | 0.14 | 0.06 | −0.05 | 1.00 |
| 11 | Employees (full-time units) | 32,396 | 61,636 | 0.30 | 0.38 | 0.28 | 0.00 | 0.19 | 0.08 | 0.65 | 0.09 | −0.02 | 0.00 |

likely to appear. Note that for long-term compensation, there is a substantial number of firms for which this is equal to zero. Out of 107 companies, 39 never issued options and 65 never issued shares as part of the compensation arrangement of top executives. Although these observations are not included in the analyses below, the correlation coefficients are affected by the inclusion of the zero observations.

Subsequently, ordinary least squares regression has been performed on the compensation elements, as well as on total compensation. We treat CEOs and other executives separately, as Aggarwal and Samwick (2003) find that compensation responds stronger to performance for managers with more responsibility. In all the models, both period and director fixed effects have been included. Although this places a burden on the degrees of freedom of each model, absent other information, the fixed effect estimator has been found to be most robust against contemporaneous correlation and heteroskedasticity (Certo and Semadeni 2006), particularly when robust standard errors are estimated, as is the case here. We tested for serial correlation, but found that this was not problematic after inclusion of period fixed effects. We do acknowledge that endogeneity of the performance variables may be an issue, since the relationship of pay to performance has also been studied widely. Methods that control for such endogeneity require, however, a time window longer than 5 years. Also because we have less than three observations for 40 per cent of the executives included in the sample, implementing such methods would seriously reduce the number of observations, and introduce possible sampling biases. In interpreting the results, it should be kept in mind that our method does not control for endogeneity.

## 4 RESULTS

First, in Table 3, we present means and growth rates for the total compensation variable throughout the sampling period. In Panel A, we make a distinction between three groups of firms, based on firm size. The distribution of firms over groups is the same as in the computation of relative TSR, with one difference: the first two groups have been merged because the variability in means over time in cluster 1 resulted in trends that do not reflect actual pay practice. The statistics in Panel A show that pay has risen substantially, particularly if compared to the average male worker aged 55–65 in The Netherlands, who experienced an annualized growth rate of 1.4 percent in the same period. In Panel B, the distribution of total pay at the population level (x € 1 million) is depicted: the figure shows that fixed pay remains fairly unchanged over the period 2002–2006, bonuses and particularly share plans are increasingly important as pay element, and the value of stock options differs greatly throughout the observation window.

TABLE 3 – MEANS AND GROWTH RATES FOR THE TOTAL COMPENSATION VARIABLE THROUGHOUT THE SAMPLING PERIOD

| | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | | Growth |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | € | n | € | n | € | n | € | n | € | % |
| *Panel A: mean total compensation and annualized growth rates* | | | | | | | | | | | |
| Large caps: CEOs | 25 | 1,283,463 | 28 | 1,567,972 | 28 | 1,912,448 | 23 | 3,257,276 | 22 | 3,279,873 | 26.4 |
| Large caps: other executives | 92 | 842,359 | 90 | 1,104,095 | 88 | 1,272,500 | 78 | 1,992,834 | 87 | 1,684,097 | 18.9 |
| Midcaps: CEOs | 30 | 536,477 | 29 | 658,689 | 29 | 804,141 | 30 | 951,560 | 31 | 778,620 | 9.8 |
| Midcaps: other executives | 63 | 411,112 | 61 | 530,463 | 65 | 503,924 | 60 | 681,558 | 70 | 601,675 | 10.0 |
| Small caps: CEOs | 56 | 300,071 | 60 | 340,050 | 60 | 356,178 | 59 | 407,000 | 59 | 411,259 | 8.2 |
| Small caps: other executives | 79 | 276,400 | 71 | 294,000 | 66 | 319,447 | 65 | 379,000 | 71 | 404,975 | 10.0 |

*Panel B: composition of total compensation*

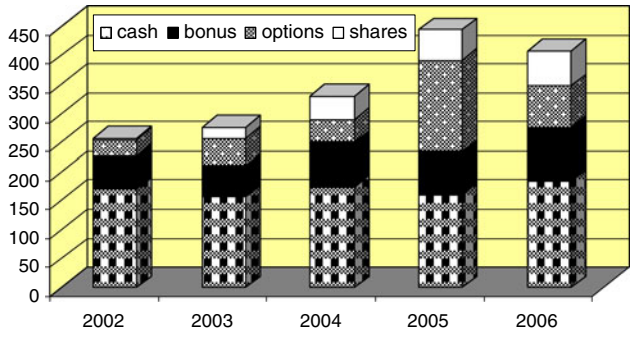


Table 4 displays the results of the regression analyses for CEOs. All estimations reach statistical significance, but the shareholder value change (SHV) model only at the 10 percent level. Also note that as only non-zero observations are included in the OPTG, OPTV, SHG and SHV models, the results relate to firms having opted for these compensation components only. In The Netherlands, share plans have become particularly popular since 2005. In 2002–2006, a total of 173 million euro has been granted to executives as part of their compensation plan, roughly two-thirds of which in 2005–2006. The number of observations for share plan models is thus limited, which makes them meaningful – with 96 and 59 observations, respectively –, but only for a small subset of observations. Most models explain a significant share of the variance in the respective dependent variables, although we should note that the benchmark model is the constant-only estimation. The adjusted

TABLE 4 – REGRESSION ANALYSES: CEOs

| | SAL | | | BON | | | OPTG | | | OPTV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Constant | 12.77 | *0.03* | ** | 8.23 | *0.86* | ** | 10.28 | *0.62* | ** | 15.99 | *0.03* | ** |
| Size | 2.43 | *1.31* | + | −13.10 | *33.70* | | 9.99 | *14.56* | | 1.80 | *0.75* | * |
| Revenue | −3.54 | *2.49* | | 154.00 | *98.90* | | 4.68 | *2.88* | | 0.03 | *0.09* | |
| RTSR | −0.01 | *0.02* | | 0.62 | *0.56* | | 1.50 | *0.44* | ** | 0.06 | *0.03* | + |
| Profit | 0.11 | *0.14* | | 5.87 | *3.18* | + | 0.20 | *3.39* | | −0.31 | *0.28* | |
| EPS | 0.00 | *0.01* | | 0.11 | *0.23* | | 0.28 | *0.16* | + | 0.00 | *0.01* | |
| AR(1) | | | | | | | | | | | | |
| n | 162 | | | 166 | | | 73 | | | 81 | | |
| nT | 509 | | | 516 | | | 175 | | | 213 | | |
| # 0 | 4 | | | 136 | | | 385 | (omitted) | | 340 | (omitted) | |
| Overall F | 24.43 | ** | | 3.67 | ** | | 6.45 | ** | | 1.63 | ** | |
| Overall $R^2$ | 0.89 | | | 0.47 | | | 0.72 | | | 0.21 | | |
| Perf. F | 0.79 | | | 2.01 | + | | 4.23 | ** | | 1.41 | | |

| | SHG | | | SHV | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| Constant | 12.04 | *0.44* | ** | 14.27 | *0.23* | ** | 15.61 | *0.15* | ** |
| Size | 13.99 | *5.78* | * | −2.51 | *3.09* | | 9.76 | *6.62* | |
| Revenue | −1.20 | *1.22* | | 0.55 | *0.46* | | −1.84 | *7.22* | |
| RTSR | 0.07 | *0.22* | | −0.33 | *0.21* | | 0.05 | *0.03* | + |
| Profit | −0.16 | *1.97* | | −0.03 | *1.28* | | −0.01 | *0.05* | |
| EPS | −0.23 | *0.09* | * | 0.05 | *0.06* | | 0.01 | *0.01* | |
| AR(1) | | | | | | | 0.35 | *0.17* | * |
| n | 41 | | | 35 | | | 134 | | |
| nT | 96 | | | 59 | | | 348 | | |
| # 0 | 472 | (omitted) | | 504 | (omitted) | | 1 | | |
| Overall F | 34.96 | ** | | 2.08 | + | | 6.53 | ** | |
| Overall $R^2$ | 0.95 | | | 0.44 | | | 0.69 | | |
| Perf. F | 1.73 | | | 1.72 | | | 1.30 | | |

Estimated equation $COMP^{g}_{ijt} = \beta_0 + \beta_1 * SIZE_{jt} + \beta_2, \ldots, \beta_5 * PERF_{jt} + \varepsilon_{jt}$, where *COMP* refers to salary (SAL), cash bonus (BON), option grants (OPTG), option portfolio value changes (OPTV), share grants (SHG), share portfolio value changes (SHV), and total compensation (TOTAL). Explanatory variables are the number of employees (*SIZE*), firm revenues (*REVENUE*), relative total shareholder return (*RTSR*), profit (*PROFIT*), and earnings per share (*EPS*) Estimation is OLS with two-way fixed effects. AR(1) terms were included whenever the Durbin-Watson test indicated this was necessary (period fixed effects were then dropped). White diagonal heteroskedasticity-consistent standard errors are reported in italics. The statistics panel refers to the number of cross-sections included (n), the number of observations (nT), the number of observations for which the dependent variable is zero (#0), the result of the F-test where the benchmark is the fixed-effects only model (F), the adjusted overall $R^2$ (Overall $R^2$), and the F-test for the joint significance of the firm performance variables (Perf. F). The dependent variable was log-transformed.

** $p < 0.01$, * $p < 0.05$, $^{+}p < 0.10$.

R-squared therefore includes the variance explained by the director fixed effects.

A test on the joint significance of the performance parameters is rejected in most cases, except for the option grants (OPTG) and bonus (BON) models. This indicates that CEO compensation in The Netherlands is only weakly related to company performance, at best. As may be expected, firm size is positively associated with salary. Also, we find some associations between performance variables and compensation components: profit is positively associated with bonus, relative TSR is positively associated with option grants and option value changes, and earnings per share are positively associated with option grants. We also find a negative association between earnings per share and share grants. It is unclear what explains this shift from share grants to option grants for CEOs who experience a decline in earnings per share.

Table 5 exhibits the results for the other executives. In general, the statistical power of these models is higher than that of the CEO models, possibly because of the larger number of observations. As with the results presented in Table 4, the variance explained in each of the models is typically substantial. F-tests for the joint significance of the performance parameters lead to the rejection of this hypothesis for the salary model only. Thus, performance tends to be significantly associated with other executives' compensation. It is relevant to note that the significance of performance variables in the aggregate is stronger for compensation components than for total compensation. This may be caused by the estimation of component models OPTG, OPTV, SHG and SHV for non-zero observations only.

We find a myriad of associations between performance variables and compensation components. The cash bonus is positively associated with profit and RTSR, whereas RTSR and revenues (RTSR and earnings per share) are associated with the value of option (share) grants. Option value changes are associated with revenues, RTSR and profit, whereas share value changes are associated with revenues and RTSR. Total compensation is associated with RTSR and revenues. With one exception (the effect of profit on option grants), all performance parameter estimates are positive.

A final result follows from the comparison of Tables 4 and 5. For no single model, the results for CEOs and other executives were qualitatively the same. These results are striking, since the components of pay contracts tend to be the same: other executives participate in the same option plans as their CEO, or do not participate in such plans. Never do other executives have separate option plans. Thus, it could be expected that the models for other executives exhibit weaker pay-for-performance relationships, but not that different performance measures show up as drivers of compensation levels. An explanation for this finding may lie in the performance criteria. Often, other executives are rewarded based on divisional performance, whereas CEO compensation is tied to overall firm performance.

TABLE 5 – REGRESSION ANALYSES: OTHER EXECUTIVES

| | SAL | | | BON | | | OPTG | | | OPTV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Constant | 12.66 | *0.10* | ** | 8.40 | *1.13* | ** | 9.48 | *0.75* | ** | 15.75 | *0.05* | ** |
| Size | 1.86 | *1.92* | | 6.86 | *24.62* | | 18.65 | *12.97* | | 2.74 | *1.03* | ** |
| Revenue | 1.34 | 2.25 | | −12.74 | *33.74* | | 40.60 | *10.40* | ** | 0.44 | *0.67* | |
| RTSR | 0.02 | 0.04 | | 1.32 | *0.42* | ** | 0.95 | *0.27* | ** | 0.04 | *0.02* | * |
| Profit | 0.30 | 0.30 | | 12.93 | *3.43* | ** | 1.46 | *1.74* | | −0.39 | *0.17* | * |
| EPS | −0.05 | *0.03* | + | −0.26 | *0.19* | | 0.00 | *0.10* | | −0.01 | *0.01* | |
| AR(1) | | | | | | | | | | | | |
| n | 381 | | | 381 | | | 187 | | | 175 | | |
| nT | 1,023 | | | 1,023 | | | 426 | | | 420 | | |
| # 0 | 13 | | | 282 | | | 651 | (omitted) | | 651 | (omitted) | |
| Overall F | 44.88 | ** | | 3.74 | ** | | 6.02 | ** | | 2.09 | ** | |
| Overall $R^2$ | 0.94 | | | 0.51 | | | 0.70 | | | 0.32 | | |
| Perf. F | 1.51 | | | 7.04 | ** | | 8.02 | ** | | 4.52 | ** | |

| | SHG | | | SHV | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| Constant | 10.97 | *0.73* | ** | 13.57 | *0.28* | ** | 15.37 | *0.09* | ** |
| Size | 24.39 | *8.41* | ** | −13.92 | *4.66* | ** | 4.77 | *2.14* | * |
| Revenue | −13.75 | *15.19* | | 19.91 | *8.27* | * | 4.22 | *2.44* | + |
| RTSR | 0.95 | *0.34* | ** | −0.22 | *0.12* | + | 0.05 | *0.02* | * |
| Profit | −2.46 | *1.96* | | −0.21 | *2.64* | | 0.14 | *0.14* | |
| EPS | −0.29 | *0.17* | + | 0.13 | *0.10* | | −0.01 | *0.01* | |
| AR(1) | | | | | | | | | |
| n | 133 | | | 94 | | | 382 | | |
| nT | 298 | | | 201 | | | 1,022 | | |
| # 0 | 805 | (omitted) | | 904 | (omitted) | | 12 | | |
| Overall F | 4.62 | ** | | 2.46 | ** | | 3.24 | ** | |
| Overall $R^2$ | 0.63 | | | 0.43 | | | 0.46 | | |
| Perf. F | 2.46 | * | | 4.08 | ** | | 2.09 | + | |

Estimated equation $COMP^{g}_{ijt} = \beta_0 + \beta_1 * SIZE_{jt} + \beta_2, \ldots, \beta_5 * PERF_{jt} + \varepsilon_{jt}$, where *COMP* refers to salary (SAL), cash bonus (BON), option grants (OPTG), option portfolio value changes (OPTV), share grants (SHG), share portfolio value changes (SHV), and total compensation (TOTAL). Explanatory variables are the number of employees (*SIZE*), firm revenues (REVENUE), relative total shareholder return (RTSR), profit (PROFIT), and earnings per share (EPS) Estimation is OLS with two-way fixed effects. AR(1) terms were included whenever the Durbin-Watson test indicated this was necessary (period fixed effects were then dropped). White diagonal heteroskedasticity-consistent standard errors are reported in italics. The statistics panel refers to the number of cross-sections included (n), the number of observations (nT), the number of observations for which the dependent variable is zero (#0), the result of the F-test where the benchmark is the fixed-effects only model (F), the adjusted overall $R^2$ (Overall $R^2$), and the F-test for the joint significance of the firm performance variables (Perf. F). The dependent variable was log-transformed.

** $p < 0.01$, * $p < 0.05$, $^{+}p < 0.10$.

## 5 CONCLUSION AND DISCUSSION

In the introduction, we posited four contributions of this paper to the literature: (1) to study the performance sensitivity of executive compensation in a non-US institutional context, here The Netherlands; (2) to include a great amount of detail, particularly to study non-CEO executives and to include the changes in value of option and share portfolios held by executives in the computation of performance sensitivity; (3) to take into account that option and share grants are often made conditional on the achievement of performance targets; and (4) to include performance measures other than total shareholder return. We discuss the results of our empirical analysis in light of these four contributions. Also, we mention policy prescriptions where relevant, and discuss more general avenues of future research.

With respect to the first contribution, this paper is among the first to document pay for performance relationships for The Netherlands. The relevance of such a study may come from institutional differences. For example, while share grants are common in the United States, they have become popular in The Netherlands only since the turn of the millennium. For our sample, stock grants and stock option plans represent a majority of remuneration in only 7–33 per cent of the companies, whereby the percentage increased in later years, which suggests some convergence to American practices. Such differences in pay structure call for research into the effect of governance systems on executive compensation. While performance sensitivity is present in share plans by definition, it is to a larger extent an element upon which the board of directors decides in The Netherlands. The cash bonus is still the core element in most European executive compensation package in spite of an increased Americanization of pay packages (Oxelheim and Randøy 2006). This bonus may well be contingent upon different performance criteria, and may be associated with different performance sensitivity than share-based components. This possibly indicates the influence of shareholders on the pay setting in the two different institutional contexts, or may be the consequence of different tax regimes. Thus, the study of other contexts than the United States remains warranted. Our findings are in line with those of Otten et al. (2008), although we are able to document relationships between market measures of company performance and long-term incentive compensation at a lower level of aggregation. Also, because of the amount of detail included in the present study, we may be able to explain the negative performance sensitivity which Duffhues and Kabir (2008) found: the focus of their paper being on the cash bonus, mostly, their study may fail to capture the trade-off between various compensation components in rewarding executives for different aspects of firm performance.

The second contribution of this paper lies in the amount of detail included. Our results show that CEO total compensation is weakly related to

performance: a joint effect of the four performance criteria was not found, while relative total shareholder return by itself showed some relationship with total compensation. For other executives, the pay-performance relations were found to be much stronger: revenues and RTSR are predictors of total compensation for non-CEO executives. The difference between the findings for CEOs and other executives points to the relevance of separately evaluating the pay for performance nexus for these positions. Different theoretical frameworks may well be relevant for understanding pay for performance for CEOs versus other executives. Two theories can be mentioned here. First, managerial power theory suggests that the performance sensitivity of compensation depends negatively on the power of the executive. After all, if executives have the power to behave opportunistically – as is assumed in agency theory – then why will they not have the power to influence the parameters of their compensation contracts (Bebchuk and Fried 2003)? Thus, power differentials may well explain the performance sensitivity of pay. Second, it follows from tournament theory (Lazear and Rosen 1981) that other executives are not only motivated by their compensation contracts, but also by the possibility to be promoted to CEO. The CEO does not have internal promotion options, but may have lower pay for performance sensitivity to compensate for a strong outside option, given that individuals dislike the variability of outcomes. To what extent managerial power and tournament theories may explain our findings remains to be determined, but future research could aim to explicitly formulate position-specific hypotheses for pay for performance sensitivity.

Our second contribution – including a large amount of detail – also relates to the inclusion of multiple components of pay: salary, cash bonus, option grants, option value changes, share grants, and share value changes. Decomposing total compensation indeed adds value, as – for other executives, for example – the effect of profit on the cash bonus does not carry over to total compensation. Thus, viewing the total compensation results in isolation, one would be tempted to erroneously suggest that profit is an irrelevant performance criterion. As we will explain below, various performance criteria may well be used jointly to reward different performances, and these strong effects at the level of compensation components may be diluted in a total compensation model. An indication that this indeed happens may be inferred from the generally low correlation coefficients among the compensation components. Apparently, different targets are rewarded through different pay elements. Finally, with respect to our second contribution, the descriptive statistics demonstrate that the share and option portfolios executives hold are substantial on average, particularly for stock options. As so-called portfolio incentives (Hall and Liebman 1998) emanate from these holdings, their inclusion in pay for performance studies is warranted.

There is a generally positive relationship between relative total shareholder return and the various long-term compensation elements. Other variables are

also found to be important, though, notably the negative effect of profitability on option value change for CEOs. We suggest that results of non-market based performance measures on the value changes of options and shares are caused by the conditionality of grants. Such plans may, and in The Netherlands do, prescribe, for example, that stock options will only definitively be granted (at the end of the vesting period) when specific accounting-based performance targets have been met. We are not aware of studies that correct the value of options for the possibility that not all options will definitively be granted at the end of the vesting period (neither is there a good overview of how important this problem is). Given the recent emphasis on CEO stock holdings and CEO stock ownership (Hall and Liebman 1998), this correction may be gaining importance: for stock (option) plans, a relationship between pay and performance exists almost by definition, and not taking the conditionality into account inflates the performance-relatedness of compensation. While we cannot directly derive from our results to what extent the conditionality affects the value of the share and option portfolio, to take account of the conditionality of share or option grants may reflect an interesting area of subsequent research.

The fourth and final contribution of our research is to include multiple performance criteria in our study. Our analysis shows that a plethora of performance criteria is used, which can be summarized by only four performance measures. Table 2 shows that over one hundred criteria were found in the annual reports of the largest Dutch corporations, but our four independent variables – revenues, profits, earnings per share, and total shareholder return – captured 75–89 per cent of these criteria. We documented a variety of relationships between these performance variables and the various compensation elements. For example, we both found that market-based measures may also be relevant for bonuses, and that accounting-based measures may explain some of the variance in stock grants and stock option plans. Our study thus both questions the results of previous efforts that relied on a single performance measure, and calls for the development of additional theory that fosters our understanding of which compensation elements are used to steer on specific corporate outcomes. The distinction between line of sight and goal agreement is relevant here: some performance criteria – e.g., RTSR – score high on goal agreement in that the objectives of shareholder and managers are aligned. Other performance criteria – e.g., revenues – are more directly under control of the executive, and thus are characterized by a high line of sight. The appropriate mix of performance criteria has not been studied, to date, as the focus in the literature rests with market-based performance criteria.

Overall, two general questions seem to arise from our study. Firstly, it is unclear what drives the choice of the various pay arrangements. We believe that context, particularly the corporate (governance) institutional framework,

country setting (regulation, fiscal regime, and the like) and social network may be of importance. However, additional systematic evidence about the relationship between context and pay arrangements is needed. More research in various national settings is necessary to investigate the contextual determinants of the adoption of the various pay structures and, subsequently, the choice of performance criteria. The variety in national institutional settings may have a predictive value for the determination of compensation contracts, yet research in this area is limited.

Secondly, the effect of pay arrangements on executive behaviors and firm outcomes requires more investigation. A fairly large stream of literature has developed to show the effects of long-term compensation, suggesting mostly that greed may also be fed instead of being contained by long-term compensation dominated contracts. The effects of bonuses, which are more important in The Netherlands and other European countries (see, e.g., Oxelheim and Randøy 2006), on executive behavior have much less widely been studied. This, too, deserves attention in future work.

Finally, our research has important implications for policy-makers. In The Netherlands and elsewhere, the recent financial crisis has led to calls for caps on executive compensation, more transparency on the pay-setting process and stronger pay for performance when the firm operates in the red. Particularly in Europe, politicians aim to coordinate legislative initiatives across national – and thus institutional – borders. While such efforts may prevent institutional competition, because firms would face similar executive compensation regulations regardless of their location, they may also result in efficiency losses. This is, first, the case because any regulation is not able to capture the details of incentive contracts which we have shown to be present. Second, international coordination results in a loss of policy-making freedom, which makes the policy measures ill-matched with the national institutional framework. While a cap on stock option and share grants may not strongly affect the incentives of an average Dutch executive, as variable compensation through a cash bonus outweighs the importance of stocks and options, the effect in the United Kingdom is likely to be much larger. Also, measures that target one compensation component may also impact other compensation elements. For example, a recent legislative change in The Netherlands has made share compensation less attractive, and leads to compensation still being tied to stock market performance yet paid out in cash. A single policy measure is therefore likely to have a myriad of effects, which are largely unpredictable because of the shortcomings of the empirical pay for performance literature, to date.

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